Aim: Introduction to Raspberry Pi 5 Model B and its components

Theory:

The Raspberry Pi 5 Model B is a compact, low-cost, high-performance single-board computer developed by the Raspberry Pi Foundation. It is designed to provide accessible computing to learners, developers, and hobbyists while supporting a wide range of real-world applications—from education and prototyping to automation and media processing.

Building on the success of its predecessors, the Raspberry Pi 5 introduces major hardware and architectural upgrades. It is powered by the Broadcom BCM2712 System-on-Chip (SoC), which features a 64-bit quad-core ARM Cortex-A76 CPU running at 2.4 GHz, and the VideoCore VII GPU for enhanced graphics capabilities. These improvements result in a significant performance boost over earlier models like the Raspberry Pi 4.

The Raspberry Pi 5 includes support for dual 4K HDMI displays, PCIe expansion, faster USB and SD card interfaces, and dedicated camera and display connectors (no longer shared), offering greater flexibility for both general-purpose computing and embedded applications.

The board also features a 40-pin GPIO (General Purpose Input/Output) header compatible with previous models, enabling connection to sensors, actuators, and other peripherals. It includes dual-band Wi-Fi, Bluetooth 5.0, Gigabit Ethernet, USB 3.0, and USB 2.0 ports for connectivity. A major addition is the presence of a power button and a Real-Time Clock (RTC) support with an external battery connection.

Understanding the components of the Raspberry Pi 5 Model B is essential for leveraging its full potential in projects involving electronics, programming, and system design. This practical introduces learners to the hardware layout, functions of various ports, and how the board integrates with external devices, forming the foundation for advanced Raspberry Pi projects.